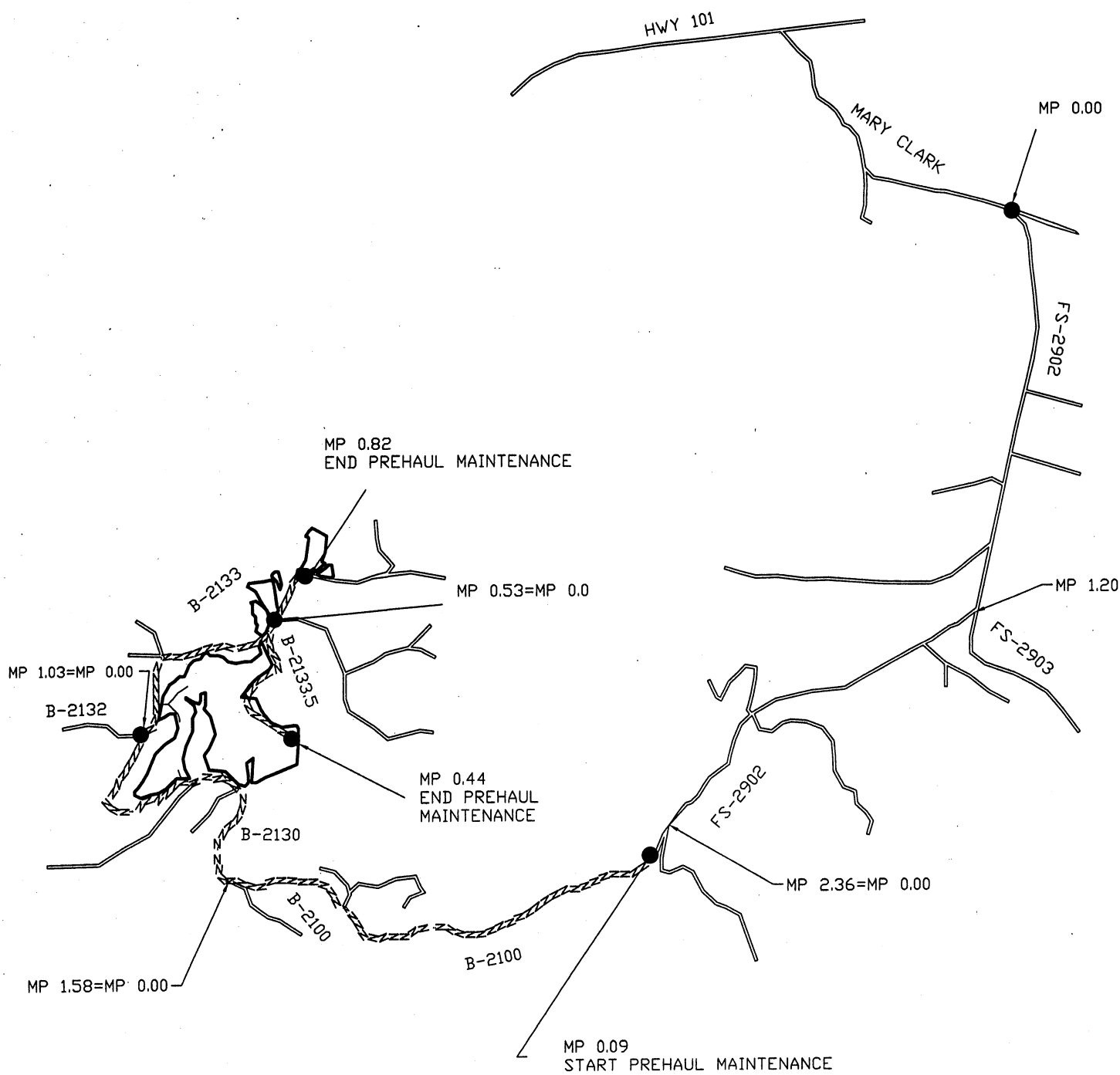


Shuwah Jigsaw Timber Sale
Road Plan Map 1 of 2
June 14, 2004

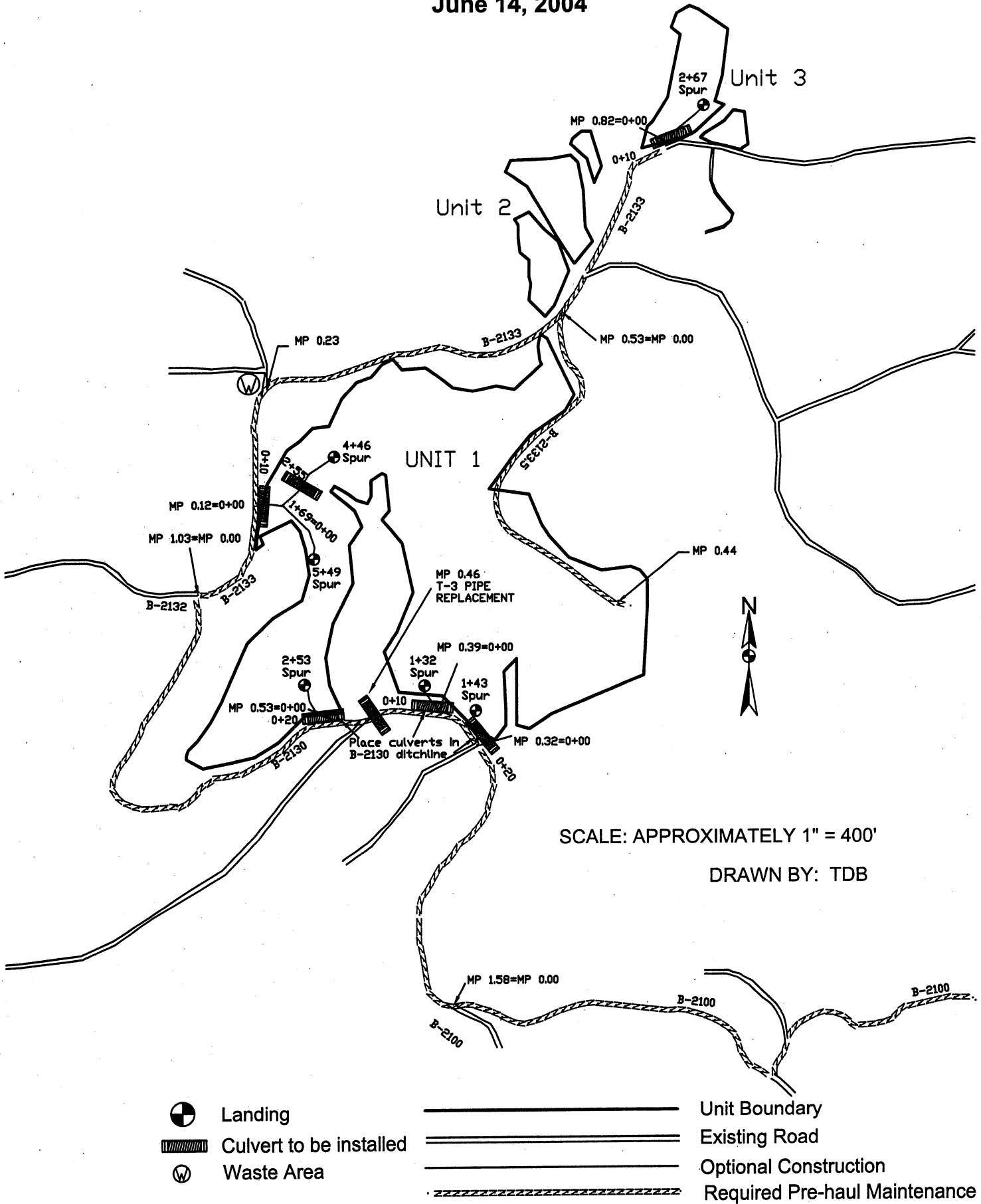


- Unit Boundary
- Existing Road
- Optional Construction
- Required Pre-haul Maintenance

NO SCALE

DRAWN BY: TDB

Shuwah Jigsaw Timber Sale Road Plan Map 2 of 2 June 14, 2004



STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME: Shuwah Jigsaw

ROAD PLAN DATE: June 7, 2004

SCOPE OF PROJECT

This project includes, but is not limited to new construction including: clearing, grubbing, right-of-way debris disposal, excavation and/or embankment to subgrade, landing construction, acquisition and installation of drainage structures and hauling and application of rock.

This project also includes, but is not limited to reconstruction including:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
B-2130	MP 0.46	Shuwah Jigsaw T-3 culvert replacement with corrugated metal culvert. Acquisition and application of grass seed and hay. Acquisition and placement of light loose rip rap.

This project also includes, but is not limited to pre-haul maintenance including:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
B-2100	MP 0.09 – MP 1.58	Grade and shape running surface.
B-2130	MP 0.00 – MP 1.03	Grade and shape running surface.
B-2133	MP 0.00 – MP 0.82	Grade and shape running surface.
B-2133.5	MP 0.00 – MP 0.44	Grade and shape running surface.

SECTION 1 - GENERAL CLAUSES

1.1-1

Clauses in this plan apply to all construction or reconstruction or pre-haul maintenance including landings unless otherwise noted.

1.1-2

Construction or reconstruction or pre-haul maintenance of the following road/s is required. All road/s shall be constructed on the State's location and in accordance with the Road Plan.

<u>Road</u>	<u>Length</u>	<u>Type</u>
B-2100	1.49 miles	Pre-haul maintenance
B-2130	1.03 miles	Pre-haul maintenance
B-2133	0.82 miles	Pre-haul maintenance
B-2133.5	0.44 miles	Pre-haul maintenance
B-2130	0.01 miles	Reconstruction

1.2-2

Purchaser shall not use roads constructed or reconstructed or pre-haul maintained under this Road Plan for hauling, other than timber cut on the right of way, without written approval from the Contract Administrator.

1.1-3

Construction or reconstruction or pre-haul maintenance of the following road/s is not required. **If the Purchaser elects to use any of these roads, they shall be constructed or reconstructed on the State's location and in accordance with this Road Plan.**

<u>Road</u>	<u>Length</u>	<u>Type</u>
1+43 Spur	1.43 stations	Construction
1+32 Spur	1.32 stations	Construction
2+53 Spur	2.53 stations	Construction
5+49 Spur	5.49 stations	Construction
4+46 Spur	4.46 stations	Construction
2+67 Spur	2.67 stations	Construction

1.1-4

Any departure from this Road Plan including relocation, extension, change in design or additional roads shall be submitted, in writing, to the Contract Administrator for consideration. Submitted plans must be approved before construction begins.

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ROAD PLAN

SALE NAME: Shuwah Jigsaw

ROAD PLAN DATE: June 7, 2004

1.1-5

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to, solid subsurface rock, subsurface springs or saturated ground, and unstable soil.

1.2-1

Construction and/or reconstruction shall not be permitted from November 1 to April 30 unless authority to do so is granted, in writing, by the Contract Administrator.

1.2.1-1

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground. Temporary diversion culverts shall be provided when designed culverts are elevated above natural ground within embankments.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches and culvert installation shall be completed and are subject to written approval by the Contract Administrator prior to rock application.

1.2-2

Purchaser shall not use roads constructed or reconstructed or pre-haul maintained under this Road Plan for hauling, other than timber cut on the right of way, without written approval from the Contract Administrator.

1.2-3

All roads shall be constructed using track mounted hydraulic excavators unless otherwise authorized, in writing, by the Contract Administrator.

1.3-1

Rock hauling shall not be permitted from November 1 to April 30 unless authorized, in writing, by the Contract Administrator.

1.3-2

Snowplowing shall not be permitted unless authorized, in writing, by the Contract Administrator.

SECTION 2 - CLEARING

2.1-1

Fell all vegetative material larger than 6 inches dbh or over 20 feet high between the marked right-of-way boundaries and within waste areas or if not marked in the field, between clearing limits specified on Typical Section Sheet.

2.1-3

Right-of-way timber shall not be decked within the grubbing limits or in locations that interfere with the construction of the road prism, as defined by the Contract Administrator. Right-of-way timber shall not be decked in locations that impede drainage.

SECTION 3 - GRUBBING

3-1

All stumps shall be removed that fall between grubbing limits shown on the Typical Section Sheet. Those with undercut roots shall be removed.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME: Shuwah Jigsaw

ROAD PLAN DATE: June 7, 2004

3-2

Grubbing limits are defined as the entire area between external limits shown on the Typical Section Sheet.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1

Right-of-way debris is defined as all vegetative material larger than one cubic foot in volume, within the clearing limits.

4.1-2

All right-of-way debris disposal shall be completed prior to application of rock.

4.2.3-3

Right-of-way debris shall not be placed against standing timber.

4.2.3-4

Right of way debris shall be scattered outside the grubbing limits.

SECTION 5 - EXCAVATION

5.1-1

Unless controlled by construction stakes or specific design sheets herein, roads shall be constructed in accordance with dimensions shown on the Typical Section Sheet.

5.1-3

The construction of road grade and alignment shall conform to the State's marked location. The reconstruction of existing road grades shall conform to the original location except as directed by the contract administrator. Grade and alignment shall have smooth continuity, without abrupt changes in direction.

Construction limitations are as follows:

<u>Favorable Grade</u>	<u>Adverse Grade</u>	<u>Minimum Curve Radius</u>
18%	12%	60 feet

Changes in road grade shall not exceed 7%, except as required in this clause.

Adverse grades on curves shall not exceed 10 percent of the curve radius.

Favorable grades through switchbacks shall not exceed 12%.

Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.

The switchback is defined as, the curved segment of road, between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

Transition grades required to meet switchback grade limitations, shall be constructed on the tangents preceding and departing from the switchbacks.

5.1-4

Extra widening on the inside of curves shall be:

2 feet extra --- 80 to 100 foot radius curves
4 feet extra --- 60 to 80 foot radius curves

5.1-5

Curve widening where required, shall be added to the inside of curves.

STATE OF WASHINGTON
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ROAD PLAN

SALE NAME: Shuwah Jigsaw

ROAD PLAN DATE: June 7, 2004

5.1-8

Excavation slopes shall be constructed no steeper than shown on the following table (except as construction staked or designed):

<u>Material Type</u>	<u>Excavation Slope Ratio</u>
Common Earth (on side slopes to 55%).....	1:1
Common Earth (55% to 70% sideslopes).....	3/4:1
Common Earth (on slopes over 70%).....	1/2:1
Fractured or loose rock	1/2:1
Hardpan or solid rock	1/4:1

5.1-9

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10

Embankments shall be widened as follows:

<u>Height at Shoulder</u>	<u>Subgrade Widening</u>
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11

Embankment slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Embankment slope ratio</u>
Common earth and rounded gravel.....	1-1/2:1
Angular rock	1-1/4:1
Sandy Soils	2:1

5.1-12

Organic material shall be excluded from embankment shown on Typical Section Sheet and from waste material deposited on slopes in excess of 40 percent.

5.1-16

On the following road excavated material which is unsuitable for culvert backfill shall be end-hauled to the designated waste area.

<u>Road</u>	<u>Endhaul/Overhaul</u>	<u>Waste Area Location</u>
B-2130	<u>From to</u> MP 0.46	Waste Area see Road Plan Map 2 of 2

5.1-19

Select borrow shall be used at the following locations:

<u>Road</u>	<u>Stations</u>	<u>Source</u>
B-2130	MP 0.46	Mary Clark Pit Run

5.1-21

Waste material shall not be deposited within 100 feet of a live stream, wetland, or wetland management zone.

5.1-23

Turnout locations noted on this plan are approximate. Location shall be adjusted to fit final subgrade alignment and sight distances.

5.1-24

Turnouts shall be intervisible with a maximum of 1,000 feet between turnouts unless shown otherwise on drawings.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME: Shuwah Jigsaw

ROAD PLAN DATE: June 7, 2004

5.2-1

Pioneering operations shall not undercut the final cut slope, deposit excavated material outside the right-of-way limits or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over the entire width of the lifts. Side hill embankments too narrow to accommodate excavation equipment may be placed by end-dumping or side casting until sufficiently wide to support the equipment.

5.4-1

Silt-bearing runoff, as defined by the Contract Administrator, shall not be permitted to go into streams.

5.4-2

Accomplish sediment removal through silt traps, silt fences, settling ponds or other methods to be approved, in writing, by the Contract Administrator.

5.5-5

Finished subgrade shall be crowned as shown on the Typical Section Sheet. Grade and compact to a uniform, firm, rut-free surface to ensure surface runoff in an even unconcentrated manner.

5.6-2

Seed will meet the specifications shown below:

SEED

Grass seed, of the following composition, proportion, and quality shall be applied at the rate of -- 60 -- pounds per acre.

Kind and Variety of Seed in Mixture	% By Weight	Minimum % Pure Seed	Minimum % Germination
Perennial Rye	40	39.2	90
Red Fescue	35	34.3	90
Highland Bent	10	9.8	85
White Clover	15	14.7	90
Weed Seed		.5 max.	
Inert and Other Crop		1.5 max.	

		100.0	

SECTION 6 - DRAINAGE

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

SALE NAME: Shuwah Jigsaw

ROAD PLAN DATE: June 7, 2004

6.2.1-1

On permanent culverts, Purchaser shall furnish, install and maintain corrugated polyethylene and/or aluminized steel Type 2 (ASTM A929, A760, A796, AASHTO M274, M36) pipe as designated on Culvert List. Culvert and flume lengths shall be varied to fit as built conditions subject to written approval by the Contract Administrator.

Note: The following spurs have temporary culverts: 1+43 Spur, 1+32 Spur, 2+53 Spur, 4+46 Spur, and 2+67 Spur. The Purchaser shall furnish, install and maintain temporary culverts of the length and diameter specified on the CULVERT LIST. Culverts may be new or used steel, plastic or such other material as approved by the Contract Administrator. All said culverts shall be removed from the road bed and State land within 30 days of timber removal as indicated by clause 9.1-1.

6.2.1-1A

Corrugated polyethylene pipe shall have a corrugated exterior and smooth interior, shall meet ASTM F405, F667 and AASHTO M252, M294 Standard Specifications, and shall be manufactured with high density polyethylene resins.

6.2.1-2

Manufacturer's approved connectors shall be used for corrugated polyethylene pipe. Annular corrugated bands and culverts ends shall be used on aluminized steel pipe.

6.2.2.1-1

Culvert, downspout, flume and energy dissipator installation shall be in accordance with Culvert and Drainage Specification Detail.

6.2.2.2-1

On permanent culverts, any damaged aluminized coating or cut ends shall be retreated with a minimum of 2 coats of zinc rich paint.

6.2.2.3-1

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline.

6.2.2.3-2

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3 percent nor more than 10 percent.

6.2.2.4-1

Installation of culverts 36 inches in diameter and over shall be approved in writing by the Contract Administrator prior to making backfill.

6.2.2.5-1

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes and energy dissipators shall be installed to prevent erosion.

6.3-1

Ditches shall be constructed prior to application of rock. Ditches shall drain to culverts, ditchouts and natural drainages.

6.3-2

Shaping the ditchline, culvert headwalls and catchbasins shall be completed prior to application of rock and shall be done in accordance with the Typical Section Sheet and Drainage Specification Detail.

6.4-1

Catch basins shall be constructed to resist erosion. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.

STATE OF WASHINGTON
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ROAD PLAN

SALE NAME: Shuwah Jigsaw

ROAD PLAN DATE: June 7, 2004

6.5-1

Head walls shall be constructed in accordance with Culvert and Drainage Specification Detail at all cross-drain culverts.

6.5-2

Embankment slopes adjacent to culvert inlets and outlets shall be armored for a distance of two culvert diameters on each side of the pipe and one culvert diameter above the pipe in accordance with Culvert List.

SECTION 7 - ROCK

7.1-1

Rock used under this contract may be obtained from the following pits on State land:

<u>Source # / Name</u>	<u>Location</u>	<u>Rock Type</u>
A/ Mary Clark	NW ¼ Sec 32 (30-12)	Pit run
A/ Mary Clark	NW ¼ Sec 32 (30-12)	Rip Rap

7.1-5

Use of all rock sources are subject to written approval from the Contract Administrator.

7.2-1

All pit operations shall be done according to State plans as listed below:

Pit

Mary Clark Pit Plan Dated December 29, 2003

7.2.1-1

Rock shall meet the following specifications for gradation when placed on the subgrade. No more than 10% of the rock shall be larger than 8 inches in any dimension and no rock shall be larger than 12 inches in any dimension.

7.4.2-1

Apply at least the minimum required rock quantity as shown on the Rock List.

7.4.2-2

Subgrade shall be approved, in writing, by the Contract Administrator prior to application of rock.

7.4.2-7

Turnouts and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-8

Each lift of rock shall be shaped as shown on the Rock List and shall be uniform, firm, rut-free and shaped to ensure surface runoff in an even unconcentrated manner.

7.4.3-3

Rock shall be spread, shaped and compacted concurrently with rock hauling operations.

STATE OF WASHINGTON
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ROAD PLAN

SALE NAME: Shuwah Jigsaw

ROAD PLAN DATE: June 7, 2004

7.4.4-1

Riprap shall consist of angular stone placed as indicated in this plan.

1. Loose Rip rap - The stone for loose riprap shall be hard, sound and durable. It shall be free from segregation, seams, cracks and other defects tending to destroy its resistance to weather. Loose rip rap shall be free of rock fines soil or other extraneous material.

- a. Light Loose Riprap - Shall meet the following requirements for grading:

At least/Not More Than	Minimum Size	Maximum Size
20% / 90%	300 lbs. to 1 ton	--
80% / --	50 lbs. to 1 ton	--
10% / 20%	--	50 lbs.

7.4.4-2

Riprap shall be set in conjunction with or immediately following construction of the embankment. No placement by end-dumping or dropping of riprap shall be allowed.

SECTION 9 - ROAD AND LANDING CLOSURES

9.1-1

The following road/s shall be closed by the purchaser within 30 days following completion of timber harvest.

<u>ROAD</u>	<u>STATIONS</u>	<u>REMARKS</u>
1+43 Spur	0+00 - 1+43	See Clause 9.1-2
1+32 Spur	0+00 - 1+32	See Clause 9.1-2
2+53 Spur	0+00 - 2+53	See Clause 9.1-2
4+46 Spur	0+00 - 4+46	See Clause 9.1-2, block road to vehicular traffic by tank trap installation.
2+67 Spur	0+00 - 2+67	See Clause 9.1-2

9.1-2

Closure shall consist of:

1. Removing all temporary culverts. Resulting backslopes shall be 1(H):1(V) or shallower. Material removed shall be placed on the road bed and compacted, with slopes of 2:1 or shallower.
2. All removed culverts are the property of the Purchaser and shall be removed from State land.
3. Construct non-driveable water bars in locations as directed by the Contract Administrator. Waterbars shall intercept the ditch line, be keyed into the road cut slope and freely drain. On grades in excess of 3%, water bars shall be skewed 30 degrees from the perpendicular of the road centerline.
4. Remove any berms, except as directed.
5. Purchaser shall furnish and apply grass seed to all areas of exposed soil. Including but not limited to: New cut slopes, fill slopes, ditch lines, water bars, culvert removal sites. Grass seed shall be applied at a rate of 60 pounds per acre. See Clause 5.6-2

ROAD PLAN

ROAD PLAN DATE: June 7, 2004

The diagram illustrates the cross-section and plan view of a road turnout. The main cross-section, labeled "SECTION VIEW", shows a road with a shoulder of width $G1$ and a base of width $B2$. The road surface is divided into three sections: a left section of width D , a central section of width R (the turnout), and a right section of width $G2$. The total width of the road is S . The width of the turnout R is also shown in the plan view. The plan view, labeled "TURNOUT DETAIL (PLAN VIEW)", shows the turnout with a width of R and a length of $50'$ on each side of the main road. The main road has a width of $50'$ and a shoulder of width $50'$. The plan view also shows the "CONSTRUCTION CLASS" for the turnout: NEW CONSTRUCTION - C, RECONSTRUCTION - R, and PRE-HAUL MAINTENANCE - P. The plan view includes a dashed line indicating the centerline of the turnout.

[illegible]

ROAD PLAN

ROAD PLAN DATE: June 7, 2004

A cross-sectional diagram of a road structure. It shows three distinct layers: a top layer labeled 'SURFACING' with a brick-like pattern, a middle layer labeled 'BALLAST' with a dotted pattern, and a bottom layer labeled 'SUBGRADE' with a horizontal line pattern. Three horizontal dimension lines are shown above the layers: the widest one at the top is labeled 'SUBGRADE WIDTH', the middle one is labeled 'BALLAST WIDTH', and the narrowest one is labeled 'SURFACE WIDTH'. A central vertical line with a circle at the bottom is labeled 'C'.

SECTION VIEW

- [illegible]

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ROAD PLAN

ROAD PLAN DATE: June 7, 2004

[illegible]

18"	16
24" - 42"	14
48" - 54"	12
60" - 96"	10

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STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

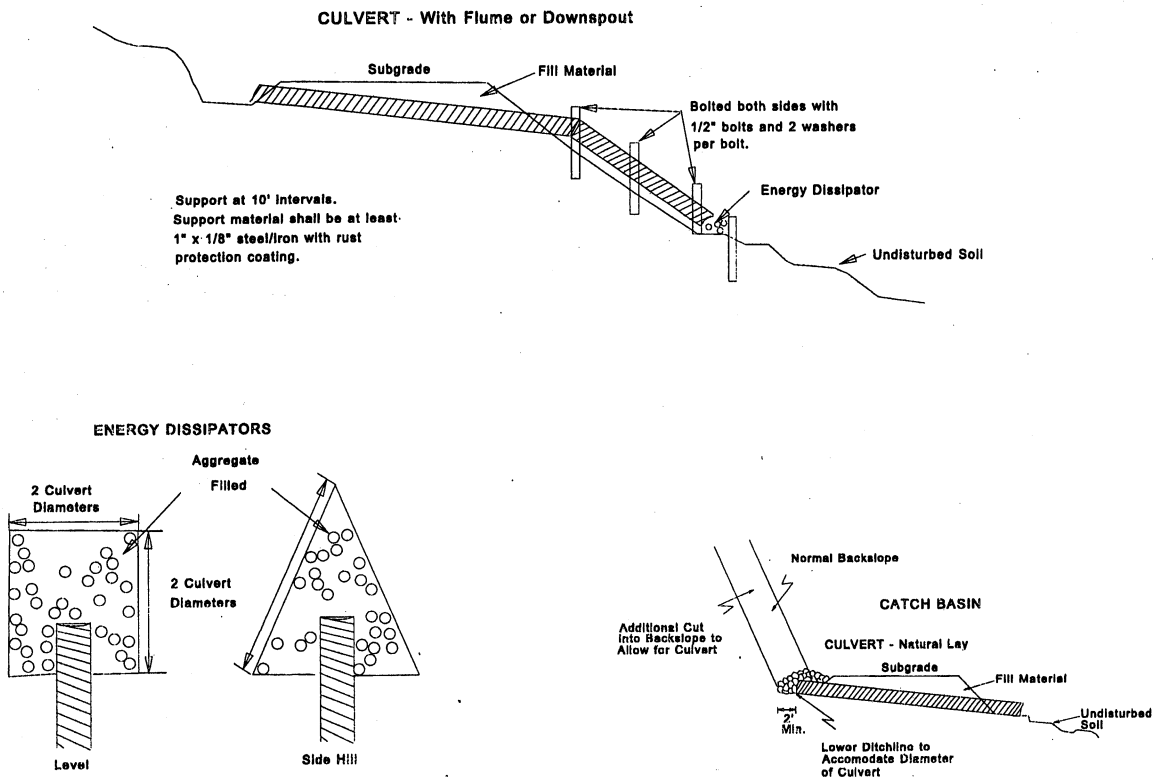
ROAD PLAN

SALE NAME: Shuwah Jigsaw

ROAD PLAN DATE: June 7, 2004

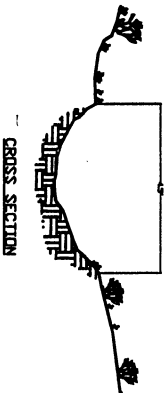
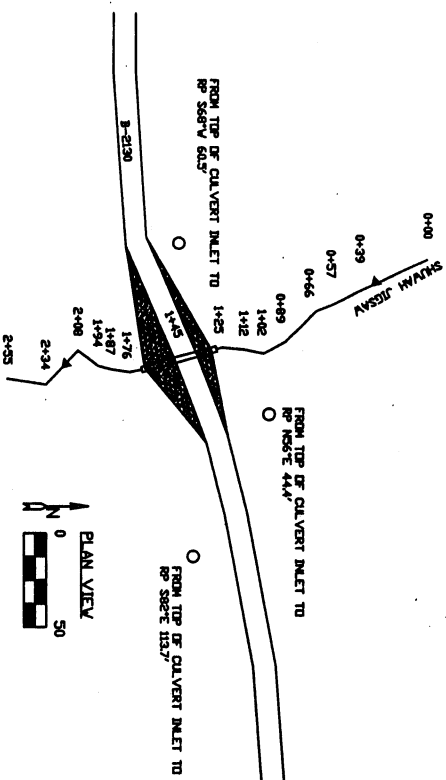
INSTALLATION REQUIREMENTS:

1. Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.
2. All bedding material of poor or non-uniform bearing capacity shall be removed and replaced with suitable fill. Crushed stone, gravel or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4", whichever is smaller. All material shall be compacted in six inch layers under the haunches, around the sides and above the pipe to the minimum height of cover.
3. Crushed stone and gravel backfill materials shall be compacted to a level of 90-95% AASHTO standard density. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.

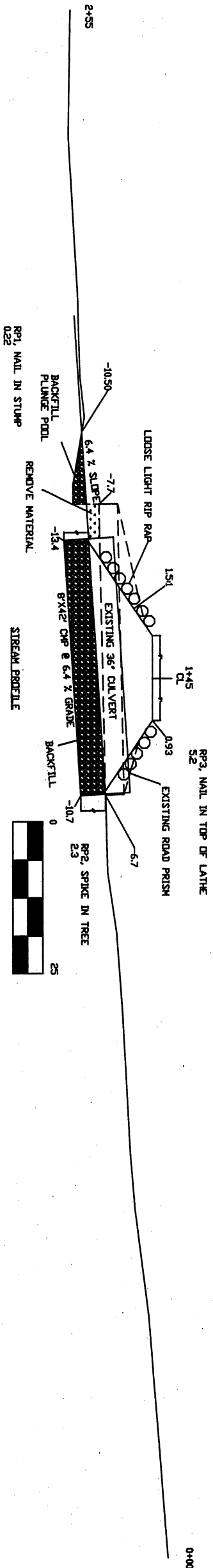


DISSIPATOR SPECIFICATIONS:
Depth: 1 culvert diameter
Aggregate: 6" plus

SHUVAH JIGSAW T-3 CULVERT REPLACEMENT SEC 12 T29N R13W T29R13W-3



BACK FILL MATERIAL, MARY CLARK PIT, PIT RUN MIX IN APPROXIMATELY 30% 6-12" QUARRY AND APPROXIMATELY 20% 12-18" SPALLS, MARY CLARK PIT
 APPROXIMATELY 49 CU. YDS. CULVERT BACK FILL
 APPROXIMATELY 6 CU. YDS. BACK FILL PLUNGE POOL
 APPROX. 55 TOTAL YARDS STREAM AND CULVERT BACKFILL, 27 CU. YDS. PIT RUN, 17 CUBIC YARDS 6-12" QUARRY SPALLS AND 11 CUBIC YARDS OF 12-18" QUARRY SPALLS
 ALL QUANTITIES ARE APPROXIMATE
 THE NEWLY FORMED FILL SLOPES WILL BE GRASS SEEDED (SEE CLAUSE 5.6-2) AND COVERED WITH HAY 3 INCHES DEEP.
 ALL PHASES OF INSTALLATION SHALL CONFORM TO THE CONDITIONS OF THE HPA.

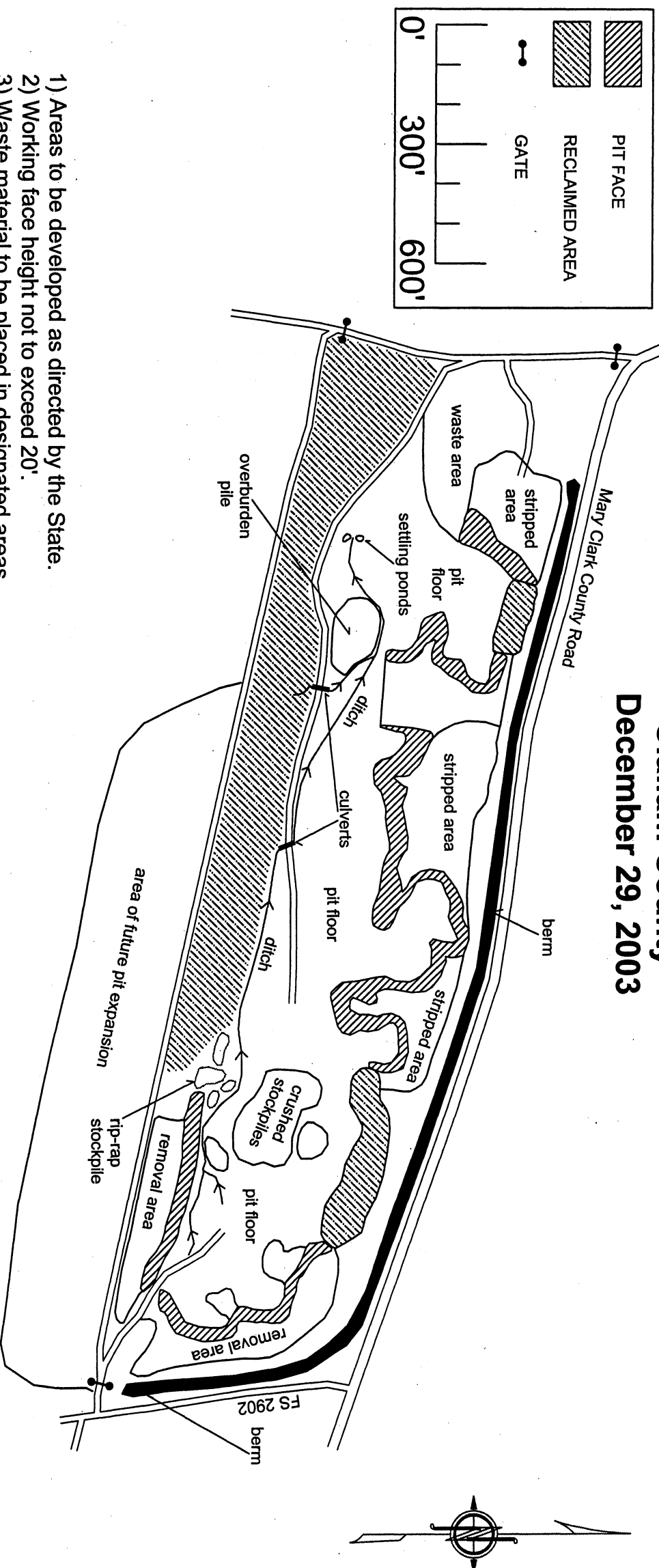


Mary Clark Pit

Section 32, T 30 N, R 12 W, W.M.

Clallam County

December 29, 2003



- 1) Areas to be developed as directed by the State.
- 2) Working face height not to exceed 20'.
- 3) Waste material to be placed in designated areas.
- 4) Suitable drainage to be maintained. Pit floor shall slope at 2% towards ditch.
- 5) Overburden stripping shall be maintained at least 10' back from the working face.